

8/28/13

AGENDA

- REVIEW HW 1-2 WORKSHEET
- SECTION 1.3
 - REAL NUMBERS & THE NUMBER LINE

- HW p 20-21 (14-42 EVENS, 46, 52)

- QUIZ ON 1.1-1.3 TOMORROW
WORDS \longleftrightarrow EXPRESSIONS
PEMDAS

TYPES OF #
↓

Lesson 1.3: Real Numbers and the Number Line

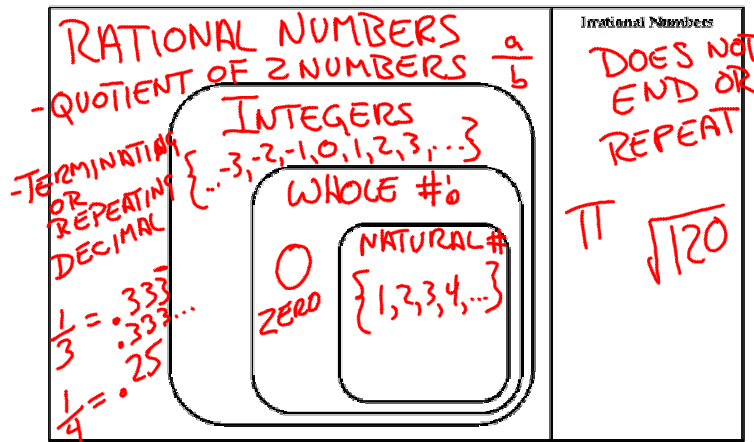
Real numbers are numbers you use in everyday life. Each number corresponds to exactly one point on a NUMBER LINE.

A perfect square is a square with the area formed by given side values like 1, 2, 3, and so on. The square root is backwards of a perfect square; you must determine the side from the given area.

List out the perfect squares from 1 to 20: $1^2 = 1, 4, 9, 16, 25, 36, 49, 64, 81, 100$
 $121, 144, 169, 196, 225, 289, 324, 361, 400$

Venn diagram = graph used to describe the different subsets of the Real numbers (R)

Real Numbers



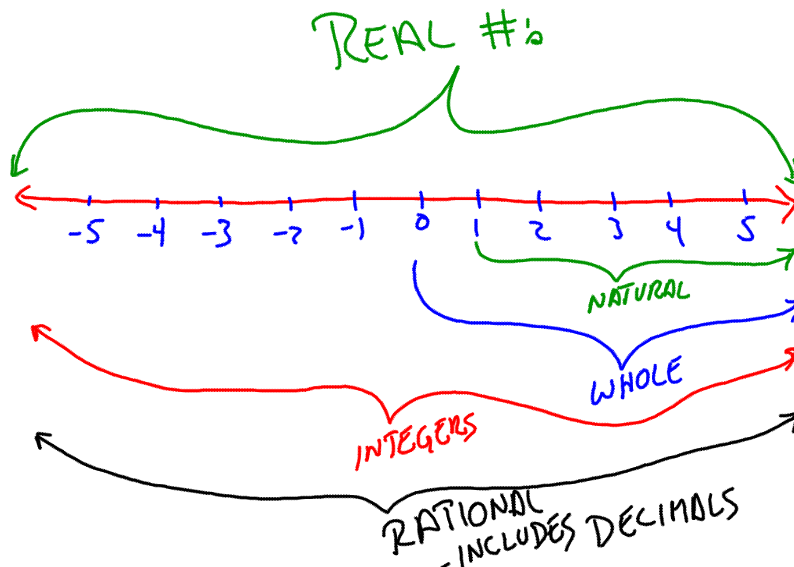
Rational numbers (Q) can be described as a QUOTIENT of integers (decimal repeats or terminates).

Natural numbers (N), $\{1, 2, 3, 4, 5, ...\}$ ZERO does not occur "naturally" [Egyptians]

Whole numbers (W), $\{0, 1, 2, 3, 4, ...\}$ natural numbers plus ZERO

Integers (Z), $\{...-2, -1, 0, 1, 2, ...\}$ includes NEGATIVE numbers [opposites]

IRRATIONAL #s (I) ARE NOT QUOTIENTS
THEREFORE, THE DECIMAL DOES NOT TERMINATE OR REPEAT



Irrational numbers (I) are not _____. Therefore, the decimal does _____ terminate or repeat.

Extend: What kind of numbers do not lay within any of the sets of our Venn diagram?

IMAGINARY NUMBERS $\sqrt{-25}$

** To classify numbers into the proper sets, make sure you include all possible sets for that number.


Example 1: Name the set(s) to which the following belong?

- a) $-\frac{2}{3}$: RATIONAL d) $-\sqrt{100}$: INT, RATIONAL
- b) π : IRRATIONAL e) 23.3 : RATIONAL
- c) 0 : WHOLE
INTEGER
RATIONAL f) $i = \sqrt{-1}$: IMAGINARY

Example 2: Compare and contrast two numbers

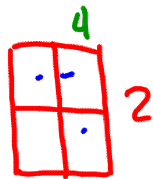
a) -3 and $\sqrt{3}$

b) $\sqrt{10}$ and π

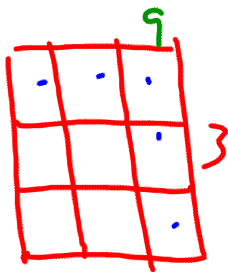
IF THIS PATTERN
CONTINUES, WHAT
WILL BE
THE 1ST
FIGURE 

TO HAVE 1

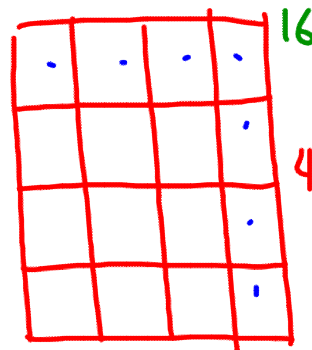
MORE THAN
200 UNITS



2



3



4

20

$$5^2 = 5 \cdot 5 = 25$$

$$6^2 = 6 \cdot 6 = 36$$

$$7^2 = 7 \cdot 7 = 49$$

$$15^2 = 15 \cdot 15 = 225$$

$$14^2 = 14 \cdot 14 = 196$$

$$\sqrt{x^2} = x \quad 3 \cdot 3 = 9 \quad 3^2 = 9 \quad \sqrt{9} = 3$$

- NOT POSSIBLE TO FIND AN EXACT
SQUARE ROOT FOR ALL NUMBERS

$$\sqrt{34} = 5.83095$$

$$\sqrt{200}$$

$$\sqrt{196} = 14$$

$$\sqrt{225} = 15$$

→ A LITTLE MORE THAN 14

VENN DIAGRAMS

PIZZA
TOPPINGS
SAUSAGE
PINEAPPLE
CHEESE
PEPP.
MUSH.

